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ROCKY MOUNTAIN FEVER.*

By ROLAND G. CURTIN, M.D.,
PHILADELPHIA.

At a meeting of the Philadelphia Committee of Arrangements of the American Climatological Association it was concluded desirable to have an article on "Rocky Mountain Fever."

Accordingly, a physician was invited to prepare a paper on the subject. At a second meeting, a short time ago, the gentleman who had been so invited was reported as having desired to be excused from compliance with the request of the committee.

The president, knowing that I had had a slight experience with this disease, asked me to lay it before the association, together with other material that was promised from persons living in the Rocky Mountain region. Several letters were written to physicians settled in that locality, with indifferent success. One of those written to had died (as was reported by his relatives). Another had removed, and his whereabouts could not be ascertained. A third had never seen but two cases. Three failed altogether to reply. Two promised information which has not as yet

* Read before the American Climatological Association at its third annual meeting.

been received. The only reply bringing with it anything of satisfaction was from Dr. Dougan, of Colorado. It seems fitting to make this statement, by way of premise, as an apology for any disappointment which our perhaps meager paper may occasion. If any additional data should be received at any future time, they will be very gladly presented to the society.

I will now read the paper furnished by Dr. Dougan, after which I will add information gathered from others, following which I will give my own very slight experience in this disease :

The term mountain fever has, by long-continued and frequent use, almost established itself in the nomenclature of disease in the mountain districts of the West. Whether or not its use is proper as designating a separate and distinct type of fever, a pathological entity, may well be questioned. A somewhat extensive acquaintance with the physicians of Colorado warrants the statement that many of them believe that we have in our high altitude a fever not described in the text-books, and to which this designation is applicable; while another and perhaps larger portion of the medical profession of the State decline to admit that such is the case. The experience of the writer, based on a practice of two years in the mountains, induces him to class himself with those who regard cases of mountain fever (so called) as belonging to one or another of the well-known and already classified varieties.

The fact must be admitted, however, if we accept the latter view, that the cases present variations, and often wide variations, from the usual course of the fevers to which we would assign them, and it is because of this departure from the course of recognized types that many practitioners have decided to accept the idea of a new variety.

And yet it is not necessary, because the phenomena observed in a case, or series of cases, differ from the phenomena which we usually regard as characteristic of a given form of fever, to decide that we have a new variety to deal with. It is

a well-known fact that the general symptomatology of fevers may be modified by environment, and that names may be given them suggested by locality; hence we have the swamp fever of the South, the Panama fever of the isthmus, and the coast fever of Africa, all of which are accepted malarial fevers modified by the conditions existing in the localities where they are found.

Not a few of the cases that are sometimes called mountain fever are ephemeral in character and difficult of classification; but the fever that is recognized as peculiarly entitled to this designation, by those who believe it a proper term, presents many claims to be designated as typhoid, modified, it is true, by causes and conditions peculiar to its surroundings.

It is freely admitted that this assumption is open to argument, that the position is not sufficiently established to justify dogmatism; but, as it is desirable that the truth should be arrived at, reasons will be offered in support of this view, and no doubt we shall have the opposite side of the question presented in due time.

At the introduction of the discussion we encounter an embarrassment from the fact that there is no accepted description of the clinical history of mountain fever, and that different observers fail in an exact agreement as to its successive phenomena, but the following will no doubt be taken as a fair presentation of the symptoms observed in an average case.

At first we are informed that the patient has become suddenly ill, but a little inquiry usually elicits the fact that he had not been quite so well as usual for a few days. A chill may or may not have announced the commencement of the illness. The temperature is usually 101° or 102° F. at the apparent onset. Sometimes it may be found as high as 104° , and not infrequently it remains nearly stationary until the approach of convalescence, being without the progressive daily increase and characteristic daily remissions usual in typhoid. There is absence of appetite without nausea, the tongue is not dry and but slightly furred, sometimes remaining nearly natural throughout the illness. The bowels are usually constipated, and require an occasional laxative. The skin is dry, but without other peculiarities. While the temperature does not exhibit diurnal changes, it may in

some instances fall suddenly one or two degrees, remain at the lower point one or more days, and then as suddenly rise to its former elevation, or the diminution may be permanent, and the further course of the disease be upon the lower temperature level, and this without reference to the therapeutic measures that may have been employed; in fact, quinine in large doses, thirty grains or more, seems powerless to even modify the temperature. Delirium may occur, but is not usual, and the patient rarely suffers from loss of sleep. The course of the disease is comparatively short—from one to two weeks—but it does not appear to end on the expiration of any definite number of days; the tendency is always toward recovery. The simplest treatment is sufficient, nourishment being of most importance. The absence of fatal cases prevents a knowledge of the condition of the intestinal tract, and if any alteration of the Peyerian glands occurs it probably does not advance to ulceration.

Among the reasons for believing the above-described cases to be mild and irregular developments of typhoid are the following:

1. Such cases are usually seen during the season of the year when typhoid is most prevalent—viz., from July to November.

2. They are most apt to occur under conditions favorable to typhoid, such as crowded and badly ventilated sleeping apartments, proximity of decomposing organic matter, impure water, defective drainage, and general disregard of sanitary requirements, conditions that too often may be found in the West as well as elsewhere.

3. Not infrequently a case commencing as above described will, before its conclusion, present some feature so characteristic of typhoid as to leave no doubt of its nature, such as spots of roseola, diarrhoea, or tympanites.

4. In the high altitudes where mountain fever is said to occur, a large proportion of the cases of undoubted typhoid pursue a remarkably mild course, and cases of "walking typhoid" are not rare. From this we may assume that the climatic conditions here existing are sufficient to moderate the intensity of the disease, and we are perhaps justified by this ob-

servation in believing that the same conditions may in other respects modify the phases of its development.

The conditions herein referred to as having a modifying influence on typhoid fever are the purity, dryness, and coolness of the atmosphere. It is hardly necessary to enter into a discussion as to whether such conditions can affect the course of disease; if heat and moisture favor the development of disease-germs, the opposite condition may be presumed to retard it; and, even though these causes may be inoperative within the body, they may so impress the prehuman or extra-human life of germs as to alter the usual developmental processes that they undergo within the human organism. As a matter of fact we do not see this modifying effect of atmospheric conditions in our observations of other diseases. It is not maintained that all the effect of atmospheric conditions as related to fevers is exerted on the disease-germs. The entire condition of the patient may be modified by the same causes; respiration, circulation, digestion, nutrition, and the condition of the nervous system, may all be more or less influenced by the peculiarities of the atmosphere, and each contribute toward the clinical history of a case.

If by the term mountain fever we understand simply that we hereby indicate mild cases of typhoid occurring in the mountain districts, the use of the term, while unscientific and objectionable, may still be tolerated as satisfactory, especially to the laity; but if it is to be understood as designating a specific disease, let us wait for clinical and pathological proofs before admitting it into the literature of the profession.

D. H. DOUGAN, M. D.

322 STORET STREET, DENVER, COL.

In looking over the scanty literature on the subject, I have found in print the following allusions to the subject under consideration:

Dr. Charles Smart, of the U. S. Army, in an extensive article upon "Mountain Fever" and Malarious Waters," in the "American Journal of the Medical Sciences" for January, 1878, arrives at the conclusion that the "camp fever" of our civil war and the "mountain fever" bear a striking

resemblance to one another, and considers the latter to be a mixture of malarial and typhoid fever poisons.

Dr. Hall, of the U. S. Army, in an article in the January number of the "American Journal of the Medical Sciences" for 1880, entitled "Typho-malarial Fever, the so-called 'Mountain Fever' of the Rocky Mountains," gives a careful account of many cases observed by him, and furnishes the following deductions :

1. The fever of the Rocky Mountain region is a hybrid disease, the prominent features of which are typhoid—the modifying, intermittent; is, in fact, the typho-malarial fever of Woodward.
2. It appears during or after the exposure incident to field-service, generally, though not necessarily, in late summer and early autumn, and seems to bear no relation to typhoid infection, as now usually accepted by the profession.
3. At its inception, this disease manifests itself as an intermittent of quotidian, tertian, or other form; this stage is followed (in about two weeks) by the typhoid stage, lasting in the neighborhood of four weeks, in which typical typhoid symptoms may be observed, modified to a greater or less degree by intermittent indications.
4. The pathological anatomy of the disease is that of typhoid fever.
5. The treatment should be antiperiodic and antipyretic.

A physician who resided temporarily in Montana informed the writer that he had followed the practice of a doctor located there for the purpose of observing "mountain fever." Four cases were pointed out to him as typical cases of this disease. My informant examined them carefully, and found all the physical signs of croupous pneumonia, with the ordinary symptoms incidental to the latter disease.

In 1868, while an assistant on the U. S. Geological Ex-

ploring Expedition under Professor Hayden, while in Cheyenne City, Wyoming Territory, it was my fortune to see in a private hospital four cases diagnosticated as "mountain fever." In two of these cases the patients were "prospectors," men who had been engaged in seeking after the outcroppings of the precious metals in the fastnesses of the mountains at a great altitude, camping out along the streams, and leading a nomadic life in general. The other two were cases of persons who had been living in canvas tents while at home, and yet had often been called by business to the mountains. One of the patients died during the third week, no post-mortem being made in his case. At some period of the disease they all had more or less diarrhoea, which in one case was continuous and very marked throughout the whole course of the disease. In one case I noticed there was a doubtful "tache rouge," coming in crops and disappearing on pressure. The margin of the spots was poorly defined, and not circular in shape. (This patient recovered.) One had epistaxis at the beginning of the disease. Tympanites was more or less marked in all the cases. In conversation with the physician who had these cases in charge, and who had been established in the region for some years, he informed me that the symptoms were about the same as those observed by him in other cases called "mountain fever." To me the cases appeared to be of typhoid fever or typho-malarial fever.

We will now proceed to study the salient points of the information laid before us.

In Dr. Dougan's paper he informs us that the temperature is usually 101° to 102° at the commencement of the attack, and that not infrequently it remains nearly stationary until the approach of convalescence, being without the progressive daily increase and characteristic daily remissions usual in typhoid and (I might add) remittent fever.

Absence of appetite without nausea is, according to the doctor, another symptom.

A constipated condition of the bowels was also noted by him. He also observes that the course is comparatively short—from one to two weeks.

No dryness of the tongue was ever observed by the doctor in any of his cases.

The tendency was always toward recovery.

The symptoms given by Dr. Dougan in some respects seem to tally with those given as of simple continued fever.

With regard to the mortality, as before stated, Dr. Dougan observes that he never had a fatal case, while the physician with whom I conversed in Cheyenne City informed me that one out of every eight or ten died.

I have conversed with several shrewd and competent physicians on the subject, all of whom agree with Dr. Dougan that the "Rocky Mountain fever" is not a separate and distinct disease, but that it is fever of other well-known forms, modified perhaps by climatic influences.

It seems to me that the following causes may have led to the assumption that there is a febrile affection peculiar to the Rocky Mountains:

Inaccurate observation may have led to errors in diagnosis. In the early history of the Rocky Mountain region the class of physicians there located perhaps included many who were probably unable, from habit and limited education, to observe with that degree of closeness which is requisite at all times for a proper diagnosis. I make this statement because the cases coming under my notice were either of typhoid fever or typho-malarial fever. A physician in Montana mistook croupous pneumonia for "mountain fever." Another influence probably at work was fashion. We have fashions in medicine in various directions. It shapes our stethoscopes, it changes our treatment, and why may it not

also change the names of diseases? In our own midst we have an example of this. Almost every infant or young child in Philadelphia that dies of bowel trouble is reported as having died of cholera infantum; entero-colitis, diarrhoea of dentition, summer diarrhoea, and other fatal diarrhoeas are often grouped under this head. This fact is the occasion of surprise and remark among the profession abroad at the frequency of cholera infantum in this country, presenting a strong contrast to the comparative rarity of the disease among them. Thus it would appear with all febrile affections in the Rocky Mountain region. They seem to have been grouped under the head of "mountain fever." The peculiarities of climate may have had some effect on them, making the different varieties appear somewhat alike to the superficial observer.

I will now give you a brief account of the impressions made upon my mind as to the climatic and other influences at work in the Rocky Mountain region. These conditions which might modify disease suggested themselves to me during my brief sojourn there:

1. *The altitude*, which lowers the temperature and rarefies the atmosphere.

2. *The purity and dryness of the air.*

One of the prominent local features of a large part of the Rocky Mountain region, and a factor liable to modify disease, is the alkaline condition of the earth's surface. The granite and other rocks found at the summit of the mountains decompose easily, and, when they break down, the salts of calcium, sodium, and magnesium are liberated and spread over the surface. The soil is often seen with an efflorescence of these salts on the surface, sometimes giving it a whiteness resembling snow. It is also seen on the margins of the ponds and lakes. The streams are often so bitter that it is impossible to drink from them, and streams less affected will often

cause a diarrhoea. This condition of the water might produce a diarrhoea in a malarial fever, or simple continued fever. When the wind blows, the sand and dust, impregnated with the alkalies, are set in motion. Of course this causes great irritation to the air-passages, and renders the atmosphere unfavorable for those afflicted with throat and lung diseases. This condition of the air might in a fever patient occasion a cough similar to that usual in typhoid fever.

The water usually found is that of the streams running down from the melting snow at the summit of the mountains. This scarcity of water has a tendency to make travellers and "campers out" careless about bathing, as indeed, also, the temperature of the water itself, which is apt to be too low to admit of bathing with comfort and safety.

This condition of affairs, occasioning personal uncleanness in connection with the excessive fatigue incident to the life and habits of the early mountaineers, doubtless rendered them susceptible to simple continued fever. In camping in that region, it is usually along the streams, so that water can be readily secured; this again favors the imbibition of malarial poison.

A fever called the "mountain sickness" is said to prevail in the Andes, in South America; and a fever has also been reported among the Himalayas, the highest mountains in the world.

To sum up, first, it would appear that in the Rocky Mountain region almost every disease with a febrile reaction has been called "mountain fever." Secondly, proof is wanting that there is a separate and distinct disease peculiar to that region.

22 SOUTH EIGHTEENTH STREET, PHILADELPHIA.

The following letter will explain itself:

FORT BENTON, MONTANA, *June 10, 1886.*

Dr. Roland G. Curtin:

DEAR DOCTOR: My excuse as a stranger for addressing you is the great pleasure your paper on "Mountain Fever," read before the American Climatological Association, gave me. I have been a resident practitioner in Montana since 1879, and during that time I have not seen a case of fever different from the "already classified varieties." I have been criticised for even doubting it, and saying, if such a type existed, it had escaped my observation. As I said, your paper gave me great pleasure, and I hope you will not consider me intrusive for expressing it.

Very respectfully,

F. ATKISSON.



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